WHAT IS CLAIMED IS:

1. An ultrasound transducer assembly for facilitating providing images from within a cavity, the ultrasound transducer assembly comprising:

integrated circuitry;

an ultrasound transducer array including a set of ultrasound transducer elements comprising a transducer material, a signal electrode and a ground electrode;

a flexible circuit to which the ultrasound transducer array and the integrated circuitry are attached during fabrication of the ultrasound transducer assembly, the flexible circuit comprising:

a flexible substrate, providing a re-shapable platform, to which the integrated circuitry and transducer elements are attached;

transducer signal lines on an inner surface of the flexible substrate, the transducer signal lines providing an electrical signal path between the integrated circuitry and the transducer element signal electrodes; and

a ground line on the inner surface of the flexible substrate; and

wherein a first contact on the signal electrode and a second contact on the ground electrode contact for each transducer element are arranged upon substantially a same physical plane as the inner surface of the flexible substrate.

2. The ultrasound transducer assembly of claim 1 wherein the transducer elements are covered by a substantially continuous metal layer having first and second discontinuities thereby defining the signal electrode and ground electrode.

3. The ultrasound transducer assembly of claim 2 wherein the first discontinuity is located on a surface of each transducer element primarily comprising the

signal electrode and the second discontinuity is located on a surface of each transducer element primarily comprising the ground electrode.

4. The ultrasound transducer assembly of claim 1 wherein the ultrasound transducer array is substantially cylindrical in shape.

5. The ultrasound transducer assembly of claim 4 wherein the spaces within the ultrasound transducer assembly between a lumen tube, the flex circuit, the transducer array and the integrated circuits are filled with a backing material characterized by relatively low acoustic impedance.

6. The ultrasound transducer assembly of claim 5 further comprising at least a first disc attached to the lumen tube and wherein the outer edges abut the re-shaped flexible substrate thereby enhancing the structural integrity of the ultrasound transducer assembly.

7. The ultrasound transducer assembly of claim 6 wherein the first disc comprises a conductive material and wherein the first disc provides a portion of an electrically conductive path between the ground electrodes and an external ground signal.

8. The ultrasound transducer assembly of claim 6 wherein the first disc is positioned at an end of the transducer assembly housing the transducer array, and a second disc attached to the lumen tube positioned at an opposite end of the transducer assembly housing the integrated circuitry, and wherein the outer edges abut the re-shaped flexible substrate.

9. The ultrasound transducer assembly of claim 1 wherein the transducer elements are covered by a substantially continuous metal layer having first and second discontinuities thereby defining an active region of each transducer element which terminates before an end of the transducer material.

10. The ultrasound transducer assembly of claim 1 wherein the transducer material comprises a PZT material.

11. The ultrasound transducer assembly of claim 1, having suitable dimensions for providing images of a blood vessel from within a vasculature, and wherein the diameter of the substantially cylindrical ultrasound transducer assembly is on the order of 0.3 to 5.0 millimeters.

12. A method for fabricating an ultrasound transducer assembly comprising a flexible circuit, integrated circuitry, and a set of transducer elements for facilitating providing images of a blood vessel from within a vasculature, the method comprising the steps:

fabricating the flexible circuit comprising a flexible substrate and a set of electrically conductive lines formed on an inner surface of the flexible substrate;

fabricating a transducer sheet comprising a transducer material, a signal electrode and a ground electrode, wherein a first contact on the signal electrode and a second contact on the ground electrode contact for each transducer element are arranged upon substantially a same physical plane; and

attaching the transducer sheet to the flexible circuit while the flexible circuit is in a substantially flat shape such that the first contact and second contact for each transducer element abuts corresponding pads of the electrically conductive lines on the inner surface of the flexible circuit.

13. The method of claim 12 further comprising the step of re-shaping the flexible circuit into a substantially non-flat shape after the steps of fabricating a transducer sheet and attaching the transducer sheet to the flexible circuit.

14. The method of claim 12 wherein the fabricating step comprises the sub-step of creating first and second discontinuities in a continuous metal layer thereby defining the signal electrode and ground electrode for each transducer element.

15. The method of claim 14 wherein the first discontinuity is located on a surface of each transducer

element primarily comprising the signal electrode and the second discontinuity is located on a surface of each transducer element primarily comprising the ground electrode.

16. The method of claim 13 wherein the re-shaping step comprises reforming the flexible circuit into a cylindrical shape.

17. The method of claim 16 further comprising the step of filling the spaces within the ultrasound transducer assembly between a lumen tube, the flex circuit, the transducer array and the integrated circuits with a backing material characterized by relatively low acoustic impedance.

18. The method of claim 17 further comprising the step of fabricating a subassembly comprising the lumen tube and at least a first disc attached to the lumen tube and wherein the outer edges of the first disc abut the re-shaped flexible substrate thereby enhancing the structural integrity of the ultrasound transducer assembly.

19. The method of claim 18 wherein the first disc comprises a conductive material and wherein the first disc provides a portion of an electrically conductive path between the ground electrodes and an external ground signal.

20. The method of claim 19 wherein the first disc is positioned at an end of the transducer assembly housing the transducer array, and further comprising the step of attaching a second disc to the lumen tube positioned at an opposite end of the transducer assembly housing the integrated circuitry, and wherein the outer

edges of the second disc abut the re-shaped flexible substrate.

21. The method of claim 13 wherein the resulting ultrasound transducer assembly has suitable dimensions for providing images of a blood vessel from within a vasculature, and wherein the diameter of the substantially cylindrical ultrasound transducer assembly is on the order of 0.3 to 5.0 millimeters.

22. The method of claim 12 further comprising the step of dicing the transducer sheet into a set of discrete transducer elements.